

Also at page 2 of the Office Action, the Examiner rejects claims 1-8, 10-12, 14, 15, 18, 19, 22, 23, 26 and 27 under 35 U.S.C. §102(e) as being anticipated by Jacobson et al. (U.S. Patent No. 6,241,921). The Examiner gives specific details applicable to a variety of claim sets as set forth below. For the following reasons, the rejection as to each identified claim set is respectfully traversed.

At page 2 of the Office Action, the Examiner states that with respect to claims 1, 3, 14 and 15, Jacobson et al. shows a twisting cylinder display having:

- a) An arrangement of capsules, wherein each capsule has a bichromal ball having two hemispheres, wherein one of the hemispheres has at least a surface having a modified colored pigment having attached at least one organic group and the other hemisphere has at least a surface with a different color and different electrical properties; wherein each ball is enclosed within a shell wherein a liquid is present between the shell and the ball so that the ball is free to rotate in response to an electric field.
- b) First and second electrodes wherein the arrangement is located between the electrodes and wherein at least one of the electrodes is substantially visually transparent.
- c) Means for creating a potential difference between the two electrodes, wherein the potential difference causes the bichromal balls to rotate toward one of the electrodes; wherein the organic group includes at least one mixture.

In response, the applicants have evaluated the text that the Examiner cites (column 2, lines 18-25; column 3, lines 40-43; Figure 1), but are unable to locate the features the Examiner identifies. More particularly, in claim 1 of the present application, each capsule has a bichromal ball having two hemispheres, wherein one of the hemispheres has at least a surface having a colored pigment having attached at least one organic group.

Jacobson et al. does not show these features. Jacobson et al. only describes polymer coated particles at column 2, lines 18-25. As stated in Jacobson et al., the polymer is merely adsorbed onto the fused pigment particles, which is quite different from attaching organic groups onto a pigment as described in the present application. There is no mention of bichromal spheres or balls, as in the claimed invention.

A related portion of Jacobson et al. (column 2, lines 25-57) refers to the polymer coated particles mentioned above as being fused into a single encapsulated structure. It logically follows that the surface of the element is a conventional polymer coating of some sort, since the polymer completely coats the pigment, and the discrete elements are fused into a larger structure. By contrast, in the claimed invention, one of the hemispheres has at least a surface having a colored pigment having attached at least one organic group. The nature and variety of the attached organic groups, as well as methods for attaching those groups, are set forth at various points in the present application, for instance at page 20, line 22 to page 23, line 23. The identified text shows that the present invention is far different from a conventional polymeric coating, such as described in Jacobson et al. Accordingly, Jacobson et al. does not teach or suggest the claimed invention.

The other text identified by the Examiner (column 3, lines 40-43) refers to a case in which only two particles are joined together by virtue of chemical group that interact to fuse the particles together. There is still no teaching or suggestion of an attached organic group that remains in the display.

As for Figure 1 of Jacobson et al., it contains five subparts, and the Examiner does not explain which subpart is considered most pertinent to the claimed invention. However, even if Figure 1 may show a bichromal ball and an electrode, it does not show the other elements set forth in claim 1, such as the presence of the attached organic groups.

Claims 3, 14, and 15 are dependent on claim 1, so the reasons set forth above apply equally to these claims. It should be noted that the identified claims contain additional features that are not present in the cited art, such as an organic group containing at least one aromatic group, one C₁-C₁₀₀ alkyl group, or mixtures thereof, or a specific colored pigment, i.e., carbon black. Therefore, additional reasons exist to distinguish these claims from the cited portions of Jacobson et al.

Accordingly, in light of the reasoning set forth above, the rejection of claims 1, 3, 14 and 15 should be withdrawn.

At page 3 of the Office Action, the Examiner states that with respect to claims 2, 18, and 19, Jacobson et al. shows a twisting cylinder display having an arrangement of particles, wherein an optical response results from the rotation of the particles in a fluid, wherein at least a portion of the particles have attached at least one organic group having one ionic group, ionizable group, or both; wherein the organic group includes at least one mixture. To support these conclusions, the Examiner cites column 2, lines 18-25; column 3, lines 40-43; and Figure 1.

In response, as a preliminary matter, claim 2 shows a visual display device or display media, not a twisting cylinder display, as recited by the Examiner. As for the specific meaning of the cited text (column 2, lines 18-25; column 3, lines 40-43; and Figure 1), the previous analysis of that text applies equally here, and the applicants cannot locate any portion of the cited text that recites particles having attached at least one organic group having one ionic group, ionizable group, or both. Only simple "non-attached" coatings are shown in Jacobson et al.

Claims 18 and 19 are dependent on claim 2, so the reasons set forth above apply equally to these claims. However, it should be noted that the identified claims contain additional features that are not present in the cited text, such as an organic group containing at least one aromatic group, one C₁-

C₁₀₀ alkyl group, or mixtures thereof, or a specific colored pigment, i.e., carbon black. Therefore, additional reasons exist to distinguish these claims from the cited portions of Jacobson et al.

Accordingly, Jacobson et al. does not show the claimed invention with regard to claims 2, 18, and 19, and, therefore, the rejection should be withdrawn.

Also at page 3 of the Office Action, the Examiner states that with respect to claim 4, Jacobson et al. shows that the bichromal ball has a pigment in which at least one of the hemispheres has a surface containing the modified pigment. The Examiner cites Figure 1 to support these conclusions.

In response, the applicants have evaluated the text that the Examiner cites (Figure 1), but are unable to locate the features the Examiner identifies.

Figure 1 of Jacobson et al. contains five subparts, and the Examiner does not explain which subpart is considered most pertinent to the claimed invention. However, even if Figure 1 may show a bichromal ball and an electrode, it does not show the other elements set forth in claim 1, from which claim 4 depends, such as the presence of the attached organic groups, a feature discussed at length above in conjunction with the rejection of claim 1.

Accordingly, Jacobson et al. does not teach or suggest the claimed invention with regard to claim 4, and, therefore, the rejection should be withdrawn.

Also at page 3 of the Office Action, the Examiner states that with respect to claim 5, Jacobson et al. shows a twisting cylinder display composed of a bichromal ball having two hemispheres, wherein one of the hemispheres has at least a surface having a modified colored pigment having attached at least one organic group and the other hemisphere has at least a surface with a different color and different electrical properties, wherein the ball is enclosed within a shell wherein a liquid is present between the shell and the ball, so that the ball is free to rotate. To support these conclusions, the

Examiner cites column 2, lines 18-25; column 3, lines 40-43; and Figure 1.

In response, as a preliminary matter, claim 5 relates to a capsule, rather than a twisting cylinder display, as recited by the Examiner. Moreover, the applicants have evaluated the text that the Examiner cites, but are unable to locate the features the Examiner identifies. As for the specific meaning of the cited text (column 2, lines 18-25; column 3, lines 40-43; and Figure 1), the previous analysis of that text applies equally here, and the applicants cannot locate any portion of the cited text that recites at least a surface having a colored pigment having attached at least one organic group.

Accordingly, Jacobson et al. does not teach or suggest the claimed invention with regard to claim 5, and, therefore, the rejection should be withdrawn.

At pages 3-4 of the Office Action, the Examiner states that with respect to claims 7, 8, 22, and 23, Jacobson et al. shows a twisting cylinder display having:

- a) an arrangement of capsules, wherein each capsule shows a bichromal ball having two segments, wherein one of the segments has at least a surface having a modified colored pigment having attached at least one organic group and the other segment has at least a surface with a different color and electrical properties, wherein each ball is enclosed within a shell wherein a liquid is present between the shell and ball so that the ball is free to rotate in response to an electric field.
- b) First and second electrodes, wherein the arrangement is located between the electrodes and wherein at least one of the electrodes is substantially visually transparent.
- c) Means for creating a potential difference between the two electrodes, wherein the potential difference causes the bichromal balls to rotate toward one of the electrodes; wherein the organic group includes at least one mixture.

To support these conclusions, the Examiner cites column 2, lines 18-25; column 3, lines 40-43; and Figure 1.

In response, as a preliminary matter, the identified claims relate to a gyricon display, rather than a twisting cylinder display, as recited by the Examiner. Moreover, the applicants have evaluated the text that the Examiner cites, but are unable to locate the features that the Examiner identifies. As for the specific meaning of the cited text (column 2, lines 18-25; column 3, lines 40-43; and Figure 1), the previous analysis of that text applies equally here, and the applicants cannot locate any portion of the cited text that recites at least a surface having a colored pigment having attached at least one organic group.

Claims 8, 22, and 23 are dependent on claim 7, so the reasons set forth above apply equally to these claims. However, it should be noted that the identified claims contain additional features that are not present in the cited text, such as an organic group containing at least one aromatic group, one C₁-C₁₀₀ alkyl group, or mixtures thereof, or a specific colored pigment, i.e., carbon black. Therefore, additional reasons exist to distinguish these claims from the cited portions of Jacobson et al.

Accordingly, in light of the reasoning set forth above, the rejection of claims 7, 8, 22, and 23 should be withdrawn.

At page 4 of the Office Action, the Examiner states that with respect to claim 10, Jacobson et al. shows a twisting cylinder display having:

- a) An arrangement of capsules, wherein an optical response results from the rotation of elements in an fluid within the capsule, wherein a portion of the elements shows a modified colored pigment having attached at least one organic group having an ionic group, ionizable group, or both.

b) Means to cause the controlled rotation of the elements to achieve the optical response. To support these conclusions, the Examiner cites column 2, lines 18-25; column 3, lines 40-43; and Figure 1.

In response, as a preliminary matter, claim 10 relates to a visual display device or display media, rather than a twisting cylinder display, as recited by the Examiner. Moreover, the applicants have evaluated the text that the Examiner cites, but are unable to locate the features that the Examiner identifies. As for the specific meaning of the cited text (column 2, lines 18-25; column 3, lines 40-43; and Figure 1), the previous analysis of that text applies equally here, and the applicants cannot locate any portion of the cited text that recites elements having at least one organic group having an ionic group, ionizable group, or both. Only a polymer coating that is not "attached" is shown in Jacobson et al.

Accordingly, Jacobson et al. does not show the claimed invention with regard to claim 10, and, therefore, the rejection should be withdrawn.

At pages 4-5 of the Office Action, the Examiner states that with respect to claim 6, Jacobson et al. shows a twisting ball display in Figure 1 having a bichromal ball having two or more segments wherein one of the segments includes a modified colored pigment having attached at least one organic group and the other segment has a different color and different electrical properties, wherein the ball is enclosed within a shell wherein a liquid is present between the ball and the shell so that the ball is free to rotate. To support these conclusions, the Examiner cites column 2, lines 18-25; column 3, lines 40-43; and Figure 1.

In response, as a preliminary matter, claim 6 relates to a capsule having a bichromal ball having two hemispheres, rather than a twisting cylinder display, as recited by the Examiner. Moreover, the

applicants have evaluated the text that the Examiner cites, but are unable to locate the features the Examiner identifies. As for the specific meaning of the cited text (column 2, lines 18-25; column 3, lines 40-43; and Figure 1), the previous analysis of that text applies equally here, and the applicants cannot locate any portion of the cited text that recites a segment that includes a modified colored pigment having attached at least one organic group.

Accordingly, in light of the reasoning set forth above, the rejection of claim 6 should be withdrawn.

At page 5 of the Office Action, the Examiner states that with respect to claim 11, Jacobson et al. shows a twisting cylinder display having a bichromal element having two segments, wherein one of the segments includes a modified colored pigment having attached at least one organic group and the other segment has at least a surface with a different color and different electrical properties, wherein each element is enclosed within a shell, wherein a liquid is present between the shell and the element, so that the element is free to rotate. To support these conclusions, the Examiner cites column 2, lines 18-25; column 3, lines 40-43; and Figure 1.

In response, as a preliminary matter, claim 11 relates to a capsule having a bichromal element having two segments, rather than a twisting cylinder display, as recited by the Examiner. Moreover, the applicants have evaluated the text that the Examiner cites, but are unable to locate the features the Examiner identifies. As for the specific meaning of the cited text (column 2, lines 18-25; column 3, lines 40-43; and Figure 1), the previous analysis of that text applies equally here, and the applicants cannot locate any portion of the cited text that recites a segment that includes a modified colored pigment having attached at least one organic group.

Accordingly, in light of the reasoning set forth above, the rejection of claim 11 should be withdrawn.

Also at page 5 of the Office Action, the Examiner states that with respect to claims 12, 26 and 27, Jacobson et al. shows a twisting cylinder display having a bichromal ball having two or more segments, wherein one of the segments includes a modified colored pigment having attached at least one organic group and the other segment has a different color and different electrical properties, wherein each element is enclosed within a shell, wherein a liquid is present between the shell and the element, so that the element is free to rotate; wherein the organic group includes at least one mixture.

Claim 12 is very similar to claim 11, except that, in claim 12, the capsule contains a polychromal element, rather than a bichromal element. In light of that, the reasons set forth in conjunction with claim 11 apply equally well here. Additionally, the Examiner has not pointed to any portions of the cited text that indicate that the polychromal element is described. In fact, even the Examiner's own characterization of this claim, set forth above, refers to a "bichromal ball" rather than a "polychromal element," as recited in the claims. This difference alone should sustain patentability.

Claims 26 and 27 are dependent on claim 12, so the reasons set forth above apply equally to these claims. However, it should be noted that the identified claims contain additional features that are not present in the cited text, such as an organic group containing at least one aromatic group, one C₁-C₁₀₀ alkyl group, or mixtures thereof, or a specific colored pigment, i.e., carbon black. Therefore, additional reasons exist to distinguish these claims from the cited portions of Jacobson et al.

Accordingly, Jacobson et al. does not show the claimed invention with regard to claims 12, 26 and 27, and, therefore, the rejection to all these claims should be withdrawn.

At pages 6-7 of the Office Action, the Examiner rejects claims 9 and 13 under 35 U.S.C. §103(a) as being anticipated by Jacobson et al. (U.S. Patent No. 6,241,921) in view of Sheridan (U.S. Patent No. 5,919,409).

More specifically, the Examiner states that Jacobson et al. shows a twisting cylinder display having:

- a) An arrangement of capsules, wherein each capsule shows a bichromal element having at least two segments, wherein one of the segments shows a modified colored pigment having attached at least one organic group and the other segment has a different color and different electrical properties, wherein each element is enclosed within a shell wherein a liquid is present between the shell and the element so that the element is free to rotate in response to an electrical field.
- b) First and second electrodes wherein the arrangement is located within between the electrodes and wherein at least one of the electrodes is substantially visually transparent.
- c) Means for creating a potential difference between the two electrodes, wherein a potential difference causes the bichromal elements to rotate toward one of the electrodes.

The Examiner admits that Jacobson et al. fails to show that each capsule includes polychromal elements. Within the same field of endeavor, however, the Examiner states that Sheridan shows a twisting ball display where each capsule shows polychromal elements. The Examiner concludes that it would have been obvious, at the time the invention was made, to construct a twisting-cylinder display with each capsule showing a bichromal element, such as shown by Jacobson et al., with each capsule having polychromal elements such as shown by Sheridan, for the purpose of making cost effective manufacturing. For the following reasons, this rejection is respectfully traversed.

First, the reasons set forth above with respect to the deficiencies of Jacobson et al. apply equally here. No combination based on Jacobson et al. could generate the claimed invention, for the reasons already set forth at length above, in particular because Jacobson et al. simply does not show the presence of the attached organic groups at the surface of the polychromal element or elements.

Also, Sheridan shows balls for a highlight color gyricon display made with segments of different zeta potentials, so that the balls can be oriented to any of the three possible orientations by application of suitable electric fields.

As noted in the previous response, Sheridan does not teach or suggest the presence of a segment comprising a colored pigment having attached at least one organic group and another segment that includes a different color and different electrical properties. Sheridan's indication of segments of different zeta potentials does not teach or suggest the segments comprising a colored pigment having attached at least one organic group as claimed in the present invention. If the Examiner believes that segments of different zeta potentials are the same as segments comprising a colored pigment having attached at least one organic group, the Examiner is respectfully requested to indicate the column and the line numbers in which Sheridan teaches or suggests segments comprising a colored pigment having attached at least one organic group and other segments having a different color and different electrical properties.

In light of the differences recited above, it is clear that Sheridan teaches a different structure than that of the claimed invention. Therefore, if one was to take the device taught by Jacobson et al. and modify it in light of Sheridan, it would not yield the claimed invention due to the structural differences set forth above.

Finally, the Examiner's economic rationale for the combination is not convincing. The Examiner concludes that a person skilled in the art would combine the teachings of the two references to achieve "cost-effective manufacturing," but no fact, rationale or line of reasoning supports this conclusion, and the applicants are unable to understand why or how any cost savings could be achieved through the combination. In any case, the prerequisite for valid combination rejections is that some feature of one of the references would naturally be applicable to the other reference, seen from the perspective of a person of ordinary skill in the art. Unsupported assertions about potential cost savings are not clearly connected to the technical details of either reference and therefore are not factors that would naturally suggest themselves to skilled persons in the relevant art. Therefore, the combination is based on improper factors or speculation.

Accordingly, in light of all the reasons set forth above, this rejection should be withdrawn.

At page 7 of the Office Action, the Examiner indicates that claims 16, 17, 20, 21, 24, 25, 28 and 29 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. The Examiner sets forth the reasons supporting patentability for the allowable subject matter.

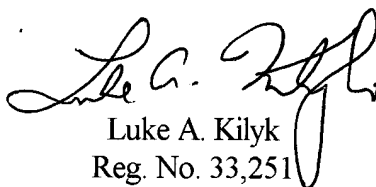
In response, the applicants appreciate the acknowledgement of allowable subject matter, and believe the arguments and amendment submitted as part of the current response justify the allowance of the rest of the pending claims.

CONCLUSION

In view of the foregoing remarks, the applicants respectfully request the reconsideration of this application and the timely allowance of all the pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,


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